

DISCUSSION OF THE AMENDMENT

Due to the length of the specification herein, Applicants will cite to the paragraph number of the published patent application (PG Pub) of the present application, i.e., US 2007/0112219, when discussing the application description, both in this section and in the Remarks section, *infra*, rather than to page and line of the specification as filed.

New Claims 16 and 17 have been added, as supported in the specification at paragraph [0070].

No new matter is believed to have been added by the above amendment. Claims 1-17 are now pending on the application.

REMARKS

The rejection of Claims 1-15 under 35 U.S.C. § 103(a) as unpatentable over Gatrone et al, "The Synthesis and Purification of the Carbamoylmethylphosphine Oxides," in SOLVENT EXTRACTION AND ION EXCHANGE, 5(6), 1075-1116 (1987) (Gatrone et al) in view of Martin, "Facile Reduction in the Synthesis of Phosphorylcholine Affinity Columns," in Tetrahedron Letters, Vol. 37, No. 44, pp. 7921-7924 (1996) (Martin), is respectfully traversed.

As recited in sole independent Claim 1, an embodiment of the present invention is a process for preparing trivalent organophosphorus compounds by condensing phosphorus compounds of the formula **i**



where Hal is a halide selected from chlorine, bromine and iodine and may be the same or different when a plurality of halides are present ( $a > 1$ ), R is an organic radical bonded to the phosphorus via a carbon or oxygen atom, and, when  $a < 2$ , the R radicals present may be the same or different, and a is a number from 1 to 3, with organic compounds that have at least one OH group, **the process comprising carrying out the condensation reaction in the presence of at least one basic ion exchange resin.**

(Emphasis added.)

As described in the specification beginning at paragraph [0002], organophosphorous compounds have gained considerable industrial importance, and a large number of preparative processes has been developed. Various methods have been disclosed for preparing trivalent organophosphorous compounds by condensing phosphorous compounds of the formula (i) of Claim 1, as excerpted above, which compounds can be characterized as halophosphines, halophosphites, halophosphonites, or halophosphinites, depending upon

whether R is bonded to the phosphorous via a carbon atom or an oxygen atom, and the value of "a".

Applicants have described various disadvantages of the prior art processes, as describe in the specification at paragraphs [0014]-[0017], such as the complete removal of the base used from a target product as costly and inconvenient; salts formed in the reaction of the bases used are frequently voluminous or occur in a particle size distribution which complicates the removal by filtration; and the maintenance of the desired reaction temperature is difficult owing to high exothermicity.

The present invention addresses these disadvantages and, as described in the specification at paragraph [0020], the objectives are obtained surprisingly despite the use of a heterogeneous substrate to scavenge the hydrogen halide being formed, there being no losses in yield.

Gatrone et al is drawn to a study of synthesis and purification of symmetrical and unsymmetrical carbamoylmethylphosphine oxides. The Examiner appears to rely on the disclosure therein of bis(2-N-hexyloxyethyl)(phenyl)phosphonite (page 1080), which is described as being prepared by reacting dichloro(phenyl)phosphine with 2-N-hexyloxyethanol. However, Applicants do not dispute that such a reaction is known in the art. The Examiner relies also on the disclosure therein (Abstract) which relates to the above-described synthesis and purification, including the use of acidic and basic ion exchange resins for the removal of acidic impurities. However, the use of such ion exchange resins for the removal of impurities after the reaction has been conducted is irrelevant to the presently-claimed process, wherein the at least one basic ion exchange resin is present during the carrying out of the condensation reaction.

Martin does not remedy the above-discussed deficiencies in Gatrone et al. The Examiner relies on Martin's disclosure of reacting a particular halogenated phosphorus

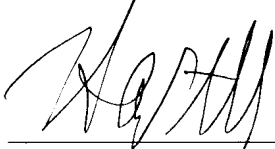
compound with a hydroxyl compound in the presence of a basic ion exchange resin (page 7922). However, the particular reaction disclosed by Martin involves the reaction of 4-nitrophenylphosphorodichloridate, which is a compound containing a P=O group, and which compound is different from, and not suggestive of, the particular dichloro(phenyl)phosphine of Gatrone et al, which contains no O moiety, let alone a P=O group. In other words, there is no disclosure or suggestion in any of the applied prior art that one skilled in the art would equate these structurally different phosphorus compounds for any reason. Note that none of the starting or final phosphorus compounds of the present invention have a P=O group.

For all the above reasons, it is respectfully requested that the rejection be withdrawn.

All of the presently-pending claims in this application are now believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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